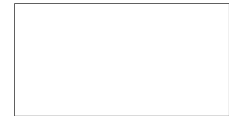


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# **Submarine Launch Procedures at Komsomolsk Shipyard Amur 199 (S)**



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SAC. USATC, Series 200, Sheet 0204-8, scale 1:200,000

LATEST IMAGERY USED	NEGATION DATE (if required)
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**ABSTRACT**

1. This is the first in a series of reports which will summarize launch procedures at Soviet shipyards. The report describes imagery-derived, step-by-step procedures from the first indication that a submarine will be rolled out through the departure of the submarine from the shipyard and gives examples of the launch-related activities. This report is intended to provide the reader with a basic understanding of launch procedures at Komsomolsk Shipyard Amur 199 [ ] and to provide definitions of significant terminology related to submarine launch procedures. All applicable satellite imagery acquired through [ ] was used in the preparation of this report. (S/WN)

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2. A locator map, 10 annotated photographs depicting the procedures observed before and during the launch and transfer of submarines, and a glossary of definitions of significant terminology related to submarine launch procedures are included in this report. (S/WN)

**INTRODUCTION**

3. Komsomolsk Shipyard Amur 199 (Figure 1), approximately 350 nm south of the mouth of the northward-flowing Amur River, is the principal submarine construction shipyard in the eastern USSR. Komsomolsk is currently engaged in the construction of Victor-III- and 199F-class nuclear-powered attack submarines (SSNs) and Kilo-class attack submarines (SSs). Past construction at the shipyard has included Whiskey-class SSs, Yankee-I- and Delta-I-class nuclear-powered ballistic missile submarines (SSBNs), Golf-class ballistic missile submarines (SSBs), Echo-I- and Echo-II-class nuclear-powered cruise missile attack submarines (SSGNs), Bravo-class training submarines (SSTs), and India-class auxiliary submarines (SSAs), as well as various surface combatants, support barges, auxiliary repair docks, and drydocks. (S/WN)

**BASIC DESCRIPTION****Overview**

4. Two construction halls are at Komsomolsk Shipyard—a two-bay hall and a four-bay hall. Both are used in the construction of submarines. Building ways 1 and 2 are in the two-bay hall, and building ways 3 through 6 are in the four-bay hall (Figure 2). (S/WN)

5. Building ways 1 and 2 have most recently been used in the construction of Kilo-class SSs. Building ways 3, 4, and 5 have most recently been used in the construction of Victor-III- and 199F-class SSNs. Building ways 6 is not currently used for submarine construction and is believed to be used for fabrication and/or staging of submarine pressure hull sections, which are later joined on ways

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**FIGURE 1. LOCATION OF KOMSOMOLSK SHIPYARD  
AMUR 199, USSR**

3, 4, and 5. Numerous heavy fabrication buildings are located in the immediate vicinity and are connected to the construction halls by a transverser system (Figure 2), although little use of the transverser system has been observed. (S/WN)

6. Submarines are rolled out of the construction halls into the YRD No 1-class auxiliary repair dock (YRD), which is positioned in the launch basin. The YRD, with the submarine in its well, is removed from the launch basin and flooded. The submarine is launched from the YRD and positioned at the fitting-out pier for a few days to a few weeks for initial fitting-out. The submarine is then placed back in the YRD for transfer to the mouth of the Amur River en route to Petrovka for final fitting-out. Submarines are usually removed

from the dock at the mouth of the Amur River and transit under their own power to Petrovka Naval Base and Shipyard [ ] for final fitting-out and sea trials. The Amur River is subject to heavy icing between early November and early May and to severe flooding in the spring. The heavy icing and flooding limit the delivery season of submarines to a period between mid-May and late October. (S/WN)

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## Roll-Out Procedures

7. Usually, the first indication of launch preparations is the alignment of the portable launch support device (LSD)\* with one of the building ways (Figures 3 and 4), unless a launch is planned from ways 1, which has a permanently fixed launch support device (Figure 3). The sequence of activity likely to be observed before the roll-out of the submarine is as follows:

- Stabilizing pads are placed on the transverser (Figures 3 and 4). Until July 1984, only one set of six stabilizing pads was in use at the shipyard. The set of stabilizing pads used during the roll-out of Victor-III SSN unit 13 in June remained on the transverser, and a new set of six stabilizing pads was used in the roll-out of the 199F in July.
- The launch rail extensions are separated (Figures 3 and 4).
- Sub-keel block foundations are positioned in the well of the YRD at the fitting-out pier, and the YRD is moved into the launch basin (Figure 4) and aligned with the building ways. The length of the sub-keel block foundations may indicate the class of submarine to be launched (Figure 5). The sub-keel block foundation pattern used during the launch of the 199F SSN was [ ] meters long, and the pattern used during the launch of Victor-III-class SSNs was [ ] meters long. The sub-keel block pattern used during the launch of the Kilo SS was [ ] long.
- The lowered stern gate of the YRD is aligned with the launch rails (Figures 5 and 6).
- The construction hall door is opened, and the bridging rails are positioned (Figure 6).

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\*The glossary of this report provides a description of significant terminology related to submarine launch procedures and is intended to provide the reader with a consistent set of terminology. (U)

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The entrances to the construction halls may have canvas curtains lowered to give a false impression of their being closed.

- The submarine is rolled out of the construction hall and into the YRD. (S/WN)

### **Launch Procedures**

8. After a submarine has been rolled out into the YRD, the launch sequence is as follows:

- The water level of the basin is raised to float the YRD off its supports.
- The YRD is positioned for exiting the basin.
- The water level in the basin is lowered to the level outside the basin. The level of water in the basin must approximate that of the river when the gate is opened.

When the gate is open, 14 of the portable caisson sections will be on the gateworks. In the closed position, three to six of the portable caisson sections will be on the gateworks, depending on the required water level in the basin. The careful analysis of the movement of the caisson sections can be used as an indication of launch preparations and also as an indication that the roll-out and launch of a submarine have taken place.

- The portable caisson sections are removed from the gateworks.
- The YRD is removed from the basin.
- The YRD is flooded near the fitting-out pier, allowing the submarine to be launched. (S/WN)

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9. After launch, Victor-III-class SSNs are positioned under the 105-meter panel tunnel (Figure 7), and 199F-class SSNs and Kilo-class SSs are positioned alongside the fitting-out pier. Nuclear-powered submarines are usually positioned on the north side of the fitting-out pier outboard of the 975-class radiological repair barge (YRRN; Figure 7), probably for activity related to the testing or startup of the reactor(s). Kilo SSs are usually

positioned on the south side of the fitting-out pier for initial fitting-out before departing the shipyard. A floating log boom (Figure 7) is placed around the newly launched submarine to preclude damage from logs which float from the nearby sawmill. (S/WN)

10. After a submarine is removed from the YRD, transfer dollies, used in the roll-out of the submarine from the construction hall, may remain

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down the centerline of the YRD. Transfer dollies are distinguished from keel blocks by their athwartships positioning and their raised ends, which conform to the hull of the submarine. In addition, transfer dollies are only positioned down the centerline of the YRD. The pattern of transfer dollies associated with the Victor-III-class SSN was [ ] long (Figure 7), and the pattern associated with the Kilo-class SS was [ ]

long (Figure 8). The pattern of transfer dollies observed after the launch of the 199F was incomplete. (S/WN)

11. Keel blocks used in the transfer of the submarine to the mouth of the Amur River are positioned along the centerline and to the sides of centerline of the YRD. The keel block pattern used for the transfer of Victor-III-class SSNs is [ ]

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meters long and [ ] wide (Figure 9), and the pattern used for the transfer of Kilo-class SSs (Figure 10) is [ ] long and [ ] wide. The keel block pattern for the 199F is [ ] long and [ ] wide (Figure 11). (S/WN)

12. The YRD used to launch and transfer submarines at Komsomolsk is one of three constructed at Komsomolsk Shipyard in the late 1960s. The other two, home-ported at Petropavlovsk Kamchatskiy Submarine Base and Ship Repair Yard [ ] and at Petrovka, are used in the overhaul and repair of submarines. The Petrovka dock is occasionally used to transfer submarines from Komsomolsk to Petrovka. The YRDs are [ ] meters long with a beam of [ ] and contain a well [ ] (S/WN)

13. Usually, only the Komsomolsk YRD, used during the launching and transfer of newly con-

structed submarines, is observed at the Komsomolsk shipyard. On at least two occasions, when a submarine was in the very late stages of construction and not ready for transit to Petrovka under its own power, the Petrovka YRD was brought to Komsomolsk to launch the submarine and transfer it all the way to Petrovka for fitting-out. This activity, which occurred near the end of the normal delivery season, cleared the building ways for the start of construction of a new hull before the next delivery season. (S/WN)

14. The YRD and launch support device are usually placed in winter storage at the shipyard between late October and early April. The YRD may be stored at the fitting-out pier and the launch support device is normally stored in the center of the launch basin. Alternatively, the YRD has been stored inside the launch basin with the LSD stored in its well and at the fitting-out quay with the LSD in its well. (S/WN)

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**GLOSSARY****Significant Terminology Related to Submarine Launch Procedures**

- Bridging rails** ..... The small section of the launch rail that bridges the gap between the building ways inside the construction hall and the launch rail when the building ways door is opened (Figure 6).
- Keel blocks** ..... Blocks placed along the centerline of the well and along the sides of the YRD after the removal of the transfer dollies and sub-keel block foundations (which are positioned only on the centerline of the YRD). The keel blocks support the submarine during its transfer to the mouth of the Amur River (Figures 9–11).
- Launch** ..... The process of removing the submarine from the launch dock and positioning it in the water. This activity should not be confused with “roll-out,” which is the process of transferring the submarine from the construction hall to the launch dock.
- Launch rail extensions** ..... The small section of the launch rail between the transverser and construction hall that must be split (moved to the sides) to accommodate the stern ramp of the launch dock. The stern ramp of the launch dock contains rails which bridge the gap between the launch rails and the rails of the YRD (Figure 3).
- Launch support device (LSD)**... A large rectangular device which supports and stabilizes the bow of the YRD during the roll-out of a submarine from the building ways into the YRD (Figures 3 and 4). A fixed launch support device has been constructed opposite building ways 1, and a portable launch support device supports launch activity at building ways 2–5.
- Roll-out** ..... The transfer of a submarine by rail from the construction hall to the well of the launch dock. This activity should not be confused with “launching,” which is the process of removing the submarine from the launch dock and positioning it in the water.
- Stabilizing pads** ..... A group of six rectangular pads positioned in two rows of three each on the transverser (Figures 3 and 4). These pads support the extreme stern portion of the launch dock during the roll-out of a submarine from building ways 3, 4, and 5. An arrangement of four pads in the shape of a “T,” with three pads nearest the edge of the launch basin and one pad in the center of the second row, is used in launching Kilo SSs from building ways 1 and 2.

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**Sub-keel block foundations ....** The small, nearly flat, rectangular blocks placed along the centerline of the launch dock and used to secure the transfer dollies after the roll-out of a submarine from the construction hall (Figure 5). The blocks are low enough for the transfer dollies to pass over them and should not be confused with the keel blocks that are placed in the well of the dock and used during the transfer of the submarine down the river.

**Transfer dollies .....** Structural cross-members contoured to the hull of the submarine with two sets of wheels (referred to as trucks). Transfer dollies are used to roll a submarine from the building ways into the launch dock (Figures 7 and 8).

**YRD alignment platforms .....** Platforms located across the launch basin from the launch rails and used for aligning the bow of the YRD with the launch rails (Figures 2 and 3). These alignment platforms also contain pumps for flooding and draining the launch basin.

**YRD stern support pedestals ...** Pedestals attached to the transverser which are arranged in pairs and support the stern portion of the launch dock during the roll-out of a submarine (Figures 3 and 4). The pedestals are permanently affixed to the construction hall side of the basin. The launch support device which supports the bow of the launch dock must be aligned with these pedestals before the launch of a submarine.

*This list of terms is SECRET WNINTEL.*

## REFERENCES

### IMAGERY

All applicable satellite imagery acquired through [ ] was used in the preparation of this report. 25X1  
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### MAPS OR CHARTS

SAC. USATC, Series 200, Sheet 0204-08, scale 1:200,000 (SECRET)

### REQUIREMENT

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